February 8, 2022

Hazardous Weather Testbed Activities

The NOAA Hazardous Weather Testbed (HWT) at the National Weather Center (NWC) in Norman, Oklahoma, is seeking participants for several virtual experiments in 2022. The testbed is a joint project of the National Weather Service Storm Prediction Center and the National Severe Storms Laboratory that provides a conceptual framework and physical space to foster collaboration between research and operations to test and evaluate emerging technologies and science. This year, we will be conducting the 2022 HWT activities *virtually* for *20 weeks* in total.

There will be *six* primary projects in the HWT during 2022. The details of the PHI Prototype Experiment, Satellite Convective Applications Experiment, and Spring Forecasting Experiment are listed in the attachments.

Brief Vulnerability Overview Tool	Jan 10-14, Feb 28-Mar 4, Mar 7-11
Tiny Threats-in-Motion (TIM)	Mar 14-18, Mar 21-25
Probabilistic Hazard Information (PHI) Prototype	Apr 18-22, Apr 25-29, May 2-6 **Application Deadline: Mar 7**
Spring Forecasting Experiment	May 2-6, May 9-13, May 16-20, May 23-27, May 31-Jun 3 **Application Deadline: Mar 7**
Satellite Convective Applications	May 23-27, Jun 6-10, Jun 13-17 **Application Deadline: Mar 7**
Hazard Services - Threats-in-Motion (HS-TIM)	3 weeks Summer/Fall 2022

Details about HWT 2022 will become available over the next several weeks at: **http://hwt.nssl.noaa.gov/**

Due to the ongoing COVID-19 pandemic, all 2022 HWT activities will take place virtually using online resources such as Google Meet and AWIPS in the Cloud. Each project-specific application form (found in the project details selection below) will require from each candidate:

   a.   Name and organization (WFO, region HQ, etc.)
   b.   Forecaster position
   c.   Prior HWT experience
   d.   Interest statement (one paragraph, 200 words max)
   e.   Weeks available

The interest statements should include your motivation for evaluating future warning and/or forecast systems in the HWT and demonstrate why you would be a good fit for a particular experiment. Participants may include WFO, CWSU, or Region HQ staff, and participants are not required to have had prior HWT experience. We are seeking diversity among regions, warning and forecast experience, and HWT experience.

Note that the HWT organizational structure has two primary programs: the Experimental Warning Program (EWP) and the Experimental Forecast Program (EFP). The EFP conducts the Spring Forecasting Experiment and any questions about this experiment should be directed to the EFP coordinator, **Israel Jirak (Israel.Jirak@noaa.gov)**. The EWP conducts the remaining HWT experiments and any questions about these experiments should be directed to the EWP coordinator, **Kodi Berry (kodi.berry@noaa.gov)**.

The deadline for the first round of applications is <u>March 7, 2022</u>. Candidates will be selected shortly thereafter. Any questions or concerns about the application process should be directed to **Alan Gerard (alan.e.gerard@noaa.gov)**.

We desire enthusiastic people who are interested in improving NWS warning and/or forecast decision-making technology, products, and services. We would be happy to provide more information about the HWT activities if requested.

Sincerely,

Alan Gerard
Hazardous Weather Testbed, National Severe Storms Laboratory

Probabilistic Hazard Information (PHI) Prototype

[Click here to apply!](#)

The deadline for applications is March 7, 2022. Candidates will be selected shortly thereafter.

WHEN – April 25-29, May 2-6, May 9-13

WHAT – Participants will issue Probabilistic Hazard Information (PHI) in combination with storm-based warnings using a cloud-based web platform. The focus for the 2022 spring experiment will be forecaster management of multiple automated objects and machine learning algorithms that provide probabilities of individual hazards. Forecasters will be able to choose between multiple tracked objects and test the manipulation speed and motion uncertainty relative to each PHI threat-in-motion. We will also be exploring the ability to produce quick updates to individual aspects of PHI, such as modifying storm motion or location alone without issuing a new product. In addition to automated guidance available within the PHI-prototype system, forecasters will have access to real-time and archived data within the AWIPS-II cloud platform for storm interrogation and analysis.

WHY – This HWT experiment provides a pre-operational evaluation of cloud-based PHI-design, workload, and possible configurations for the initial implementation in operations. Feedback from this evaluation will be used for configuration of PHI within Hazard Services and provide guidance for an operational implementation of PHI at NWS offices nationwide.

WHO – All forecasters are welcome to apply for this experiment. We would like geographic, experiential, and general diversity in our forecaster pool. Completion of the Warning Decision Training Division's Radar Applications Course and some operational severe weather warning experience is desired.

Satellite Convective Applications Experiment

[Click here to apply!](#)

The deadline for applications is March 7, 2022. Candidates will be selected shortly thereafter.

WHEN – May 23-27, June 6-10, June 13-17

WHAT – Participants will issue experimental short-term forecast discussions, convective warnings, and impact decision support services for a given County Warning Area using new and experimental satellite products and guidance using the cloud-based AWIPS-II platform during live weather cases. Forecasters will participate in virtual discussions with subject matter experts as well compose blog posts during realtime operations regarding their use of the operational and experimental satellite products in the warning decision-making process. Feedback will also be captured through surveys and post-event group discussions. The experimental and operational satellite products most likely to be available include, but are not limited to:

- Geostationary Lightning Mapper (GLM) total lightning data: Gridded and point-based lightning observations from GOES-16 and GOES-17.
- NUCAPS Temperature and Moisture Profiles: Individual profiles, gridded plan views, and experimental boundary layer modified profiles. Profiles are generated using data collected from polar-orbiting satellites including NOAA-20.
- Optical Flow Winds data: High-resolution cloud top wind data derived from GOES-R ABI imagery from mesoscale scenes.
- PHSnABI Model: ABI-enhanced data using observations from polar hyperspectral soundings.
- ProbSevere Hazard Model (version 3): Fusion of GOES cloud products, MRMS data, lightning data, and environmental fields through object-based tracking on both GOES and radar imagery. Uses machine learning methods to produce an overall probability of severe weather as well as for specific probabilities for individual hazards (e.g., hail, wind, tornado) and lightning potential for individual storms.

WHY – This HWT experiment provides an operational demonstration of products and capabilities associated with the recently-launched GOES-R and JPSS series of satellites. The additional demonstration of JPSS products introduces and familiarizes users with newly developed products associated with the next generation polar-orbiting satellite system. This evaluation will gauge the effectiveness of the GOES-R training, test forecaster understanding of GOES-R/JPSS data, understand the usability and effectiveness of the visualizations in AWIPS, and identify best practices for integrating the new data into operations. Feedback received during GOES-R/JPSS product demonstrations will be integrated into training initiatives in coordination with the Warning Decision Training Division and the GOES-R/JPSS programs and researchers for future product development and visualizations.

WHO – All forecasters are welcome to apply for this experiment. We would like geographic, experiential, and gender diversity in our forecaster pool. Training with IDSS concepts is preferred.